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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,083	08/31/2001	Steven M. Lefkowitz	10010381-1	1180

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06/02/2003

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EXAMINER

TRAN, MY CHAU T

ART UNIT

PAPER NUMBER

1639

DATE MAILED: 06/02/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/944,083

Applicant(s)

LEFKOWITZ ET AL.

Examiner

My-Chau T. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-49 is/are pending in the application.
- 4a) Of the above claim(s) 27-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-26 and 44-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. Applicant's amendment filed 3/25/03 in Paper No. 8 is acknowledged and entered.

Claims 48-49 are added by the amendment.

2. Claims 7-49 are pending.

Election/Restrictions

3. This application contains claims 27-43 drawn to an invention nonelected with traverse in Paper No. 6. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Terminal Disclaimer

4. The terminal disclaimer filed on 3/25/03 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of US Patent 6,319,674 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Withdrawn Rejections

5. The previous rejections under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, and 6-8 of U.S. Patent No. 6,319,674 (Fulcrand et al.) in view of Wang et al. (US Patent 5,922,617), for claims 7, 14, 16, and 23 have been withdrawn in view of applicant's terminal disclaimer.

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6. Claims 7-26 and 44-49 are treated on the merit in this Office Action.
7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Maintained Rejections

Claim Rejections - 35 USC § 103

8. Claims 7-14, 16-23, 25-26, and 44-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sundberg et al. (US Patent 5,624,711) in view of Wang et al. (US Patent 5,922,617). *(Note: the newly added claims 48-49 would now be included in this rejection)*

Sundberg et al. discloses a method and an array of immobilized peptides, oligonucleotides, or other small organic molecules on a variety of derivatized solid substrate (col. 1, lines 64-67 to col.2, lines 1-10; col. 9, lines 43-53). The method comprises a solid substrate that is reacted with a derivatization reagent having a reactive site (functional group) (col. 10, lines 55-66; figure 8-11). The reactive site on the derivatized substrate would covalently attached to the linking molecules such as peptides, oligonucleotides, or nucleic acids (col. 11, lines 49-62; col. 4, lines 43-56). Groups that are suitable for attachment of the linking molecules include ester, amine, and aldehyde (col. 11, lines 59-62; figure 8). The array is examined for the relative amount of specific and non-specific binding between the substrate on a solid support and a receptor by reacting the array with a sample (col. 23, lines 1-15).

The method of Sundberg et al. does not expressly disclose that different polymer ligands are attached on the surface of the array and transmitting the data to a remote location.

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Wang et al. discloses methods and devices for rapidly screening a large number of events. The devices comprise of a microarray of bound components and the methods comprise of preparing the microarray (col. 2, lines 60-65). The method comprises of modifying the surface of the solid substrate by the introduction of functionalities, which would react with the bound components (col. 3, lines 17-25 and 38-45). The bound components include nucleic acids and proteins (col. 3, lines 56-58; col. 5, lines 7-10). The microarray comprise of a plurality of different components (col. 2, lines 60-65). The method of Wang et al. further comprise of assaying the microarray by detecting the signal produced using a disk scanner (col. 10, lines 16-25 and 50-62). The scanner would be connected to the computer through which the data is collected and process (col. 12, lines 59-67).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include an array of different polymer ligands on the surface of the substrate and transmitting the data to a remote location as taught by Wang et al. in the method of Sundberg et al. One of ordinary skill in the art would have been motivated to include an array of different polymer ligands on the surface of the substrate in the method of Sundberg et al. for the advantage of detecting multiple analytes. Since both Sundberg et al. and Wang et al. disclose a method of attaching polymer ligands onto the surface of the solid substrate by modifying the surface of the solid substrate by the introduction of functionalities, which would react with the bound components (Sundberg: col. 10, lines 55-66; figure 8-11; Wang: col. 3, lines 17-25 and 38-45).

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9. Claims 7, 15-16, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sundberg et al. (US Patent 5,624,711) in view of Wang et al. (US Patent 5,922,617) as applied to claims 7-14, 16-23, and 25-26 above, and further in view of Gleason et al. (US Patent 5,561,097).

The methods of Sundberg et al. and Wang et al. applied for the reasons discussed above.

The method of Sundberg et al. as modified by Wang et al. does not expressly disclose that the functional group is imidazolyl carbamates.

Gleason et al. discloses a method of covalently coupling ligands onto a support (col. 5, lines 24-29). The method comprises of a reactive support, which comprise of a reactive functional group that covalently couple with the desired ligand. A number of useful particles and membranes are commercially available which contain reactive functional groups such as aldehydes and imidazolyl carbamates (col. 5, lines 46-51).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the functional group in the method of Sundberg et al. as modified by Wang et al. with the imidazolyl carbamates functional group of Gleason et al. One of ordinary skill would be motivated because Sundberg et al., Wang et al., and Gleason et al. disclose the methods of attaching ligands onto the surface of the solid substrate (Sundberg: col. 10, lines 55-66; figure 8-11; Wang: col. 3, lines 17-25 and 38-45; Gleason: col. 5, lines 24-29). Further, Gleason et al. disclosed that there are a number of commercially available solid supports, which contain reactive functional groups such as aldehydes and imidazolyl carbamates (col. 5, lines 46-51). The choice of one particular type of functional group on a support is dependent on the availability and accessibility of that functional group.

Response to Arguments

10. Applicant's arguments in view of the rejection under 35 U.S.C. 103(a) of Claims 7-14, 16-23, 25-26, and 44-49 as being unpatentable over Sundberg et al. (US Patent 5,624,711) in view of Wang et al. (US Patent 5,922,617) filed 3/25/03 have been fully considered but they are not persuasive.

Applicant contends that the combined teaching of Sundberg et al. and Wang et al. fail to teach or suggest the claimed methods because neither Sundberg et al. or Wang et al. describe a surface displaying olefin functional groups that consists of a single site of unsaturation.

It is the examiner position that the combined teaching of Sundberg et al. and Wang et al. do teach or suggest the claimed methods. Both Sundberg et al. and Wang et al. describe a polymer surface such as polystyrene (a surface displaying olefin functional groups that consists of a single site of unsaturation). Sundberg et al. describe, "*the substrate may be a polymerized Langmuir Blodgett film, functionalized glass, Si, Ge, GaAs, GaP, SiO₂, SiN₄, modified silicon, or any one of a variety of gels or polymers such as (poly)tetrafluoroethylene, (poly)vinylidenedifluoride, polystyrene, polycarbonate, or combinations thereof*" (col. 11, lines 29-34). Wang et al. describe the surface of the substrate wherein "*instead of silicon functionalities, one may use organic addition polymers, e.g. styrene, acrylates and methacrylates, vinyl ethers and esters, and the like*" (col. 3, lines 65-67). Further, the specification disclose that "*the substrate may comprise any material that has a plurality of reactive hydrophilic sites on its surface, or that can be treated or coated so as to have a plurality of such sites on its surface. Suitable materials include, but are not limited to, supports that are typically used for solid phase chemical synthesis, e.g., cross-linked polymeric materials (e.g.,*

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divinylbenzene styrene-based polymers)” (pg. 8, paragraph [40], lines 8-12). Therefore, the combined teaching of Sundberg et al. and Wang et al. do teach or suggest the claimed methods because the substrate describe by Sundberg et al., Wang et al., and the specification are the same. The limitation of a surface displaying olefin functional groups that consists of a single site of unsaturation is inherent in the substrate surface of Sundberg et al. and Wang et al.

Additionally, the newly added claims 48-49 is included in this rejection because the combined teaching of Sundberg et al. and Wang et al. do to teach or suggest the claimed limitation of an “olefin functional groups that consists of a single site of unsaturation each comprise a terminal $-\text{CH}=\text{CH}_2$ moiety”. The polystyrene polymer disclose by both Sundberg et al. and Wang et al. have “a terminal $-\text{CH}=\text{CH}_2$ moiety”. Therefore, the combined teaching of Sundberg et al. and Wang et al. do to teach or suggest the claimed limitation of claims 48-49.

11. Applicant's arguments in view of the rejection under 35 U.S.C. 103(a) of Claims 7, 15-16, and 24 as being unpatentable over Sundberg et al. (US Patent 5,624,711) in view of Wang et al. (US Patent 5,922,617) as applied to claims 7-14, 16-23, and 25-26 above, and further in view of Gleason et al. (US Patent 5,561,097) filed 3/25/03 have been fully considered but they are not persuasive.

Applicant alleges that the combined teaching of Sundberg et al. and Wang et al. in view of Gleason et al. fail to teach or suggest the claimed methods because neither Sundberg et al. or Wang et al. describe a surface displaying olefin functional groups that consists of a single site of unsaturation.

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It is the examiner position that the combined teaching of Sundberg et al. and Wang et al. in view of Gleason et al. do teach or suggest the claimed methods because the substrate described by Sundberg et al., Wang et al., and the specification are the same. The limitation of a surface displaying olefin functional groups that consists of a single site of unsaturation is inherent in the substrate surface of Sundberg et al. and Wang et al. as discussed above.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Chau T. Tran whose telephone number is 703-305-6999. The examiner is on ***Increased Flex Schedule*** and can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew J. Wang can be reached on 703-306-3217. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1123.

mct
May 28, 2003


PADMASHRI PONNALURI
PRIMARY EXAMINER